Chemistry Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Conductivity Lab Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Block\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Purpose: To identify which substances that produce ions in aqueous solutions.

Background: Ionic solids that are soluble in water will dissolve and dissociate. They dissociate (break apart) into their aqueous ions. If ions are present in solution, the solution will conduct electricity and the solution is called an electrolyte. Covalent or molecular substances that dissolve in water do not dissociate and therefore are called nonelectrolytes. If a compound is insoluble, it will not dissociate and will also be nonelectrolyte.

**Procedure**:

1. Place the metal tips of the conductivity tester in the solution or substance and observe to see if the lights turn on.
2. Measure the conductivity of the solution or substance according to the LED lighting. Fill in the data table below.

|  |  |  |  |
| --- | --- | --- | --- |
| Scale | Red LED | Green LED | Conductivity |
| 0 | Off | Off | Low or None |
| 1 | Dim | Off | Low |
| 2 | Medium | Off | Medium |
| 3 | Bright | Dim | High |
| 4 | Very Bright | Medium | Very High |

**Data:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Formula | Soluble?  (Yes/no) | Conductivity | Ionic/Molecular |
| Tap Water (l) |  |  |  |  |
| Deionized Water (l) |  |  |  |  |
| Sodium chloride (s) |  |  |  |  |
| Sodium chloride (aq) |  |  |  |  |
| Sucrose (aq) |  |  |  |  |
| Calcium chloride (aq) |  |  |  |  |
| Sodium bicarbonate (aq) |  |  |  |  |
| ethyl alcohol |  |  |  |  |
| Lemon juice |  |  |  |  |
| Pickle |  |  |  |  |

**Questions:**

1. What does dissociate mean?
2. Write the equation for the dissociation of calcium chloride.
3. What is the difference between ionic and molecular compounds with regard to the way electrons behave?
4. Which molecular substance was soluble in water but was a nonelectrolyte?
5. Which substances (ionic or molecular) are electrolytes?

**Conclusion:** (Identify the substances that dissociate into ions)